OPTIMIZING STORM WATER

A supplement to the "Clear Path" report with recommendations to optimize storm water in California's local water supplies

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California Council for Environmental and Economic Balance

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Founded in 1973 by Governor Edmund G. Brown, the California Council for Environmental and Economic Balance (CCEEB) is a leader in advancing policies that improve the environment and protect public health, while maintaining a strong and competitive economy.

FOREWORD

The California Water Boards, nongovernmental organizations, and permittees have worked tirelessly to improve water quality and the health of the environment. Yet new and complex problems related to climate change, water supply, nonpoint source pollution, and aging infrastructure are challenging California's progress. Because of this, it is more critical than ever to focus limited resources on sustainable, multi-benefit solutions.

CCEEB – an organization whose mission is to find environmental and economic balance – seeks to support the State Water Board's efforts to optimize storm water.

Following CCEEB's 2013 publication of the forward-looking report, "A Clear Path to Cleaner Water: Implementing the Vision of the State Water Board for Improving Performance and Outcomes at the State Water Boards," the California State Water Board adopted a "Strategy to Optimize Resource Management of Storm Water," also known as STORMS, to guide the state's storm water program. CCEEB will continue to be an active member of the STORMS Implementation Committee and is committed to ensuring the success of its vision and process.

To this end, CCEEB's Water Quality Task Force presents in this report its findings to support and advance the state's storm water program. This report builds upon efforts already underway at the State Water Board. It recommends that STORMS be modified to narrow the focus to specific scientific, legal, and technical issues. The six recommendations would incentivize collaborative and creative approaches, address resource limitations, establish program priorities, and set reasonable expectations for dischargers regulated under the program. The State Water Board should continue to solicit input, clarify goals and objectives, identify issues, and provide needed guidance to dischargers regarding permit implementation and compliance.

I would like to personally express CCEEB's appreciation to Susan C. Paulsen of Exponent, Inc. for her work and dedication in the preparation of this report and to Devin P. Richards, of CCEEB, for his editorial and design support. CCEEB is also grateful for the contributions, ideas, and input from members of the Water Quality Task Force.

CCEEB hopes, in the spirit of continued collaboration – with the State Water Boards, dischargers, the environmental community, and other stakeholders – that these recommendations will advance the work to optimize storm water. It will be through our collective efforts that we will find a clearer path to clean water.

Gerald D. Secundy
CCEEB president and former vice chair of the
State Water Resources Control Board

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EXECUTIVE SUMMARY & RECOMMENDATIONS

Managing storm water, including dry weather flows, presents many unique challenges. In contrast to traditional point source discharges, storm water discharges exhibit extreme variability in flow rates, flow volumes, and water quality, even within a single watershed or storm event. This variability, along with unique economic, technical, and legal issues, presents significant barriers for managing storm water and enhancing local water supplies.

California's need for sustainable water supplies requires that barriers be overcome. To this end, the California Council for Environmental and Economic Balance (CCEEB) issued a report in 2013 titled, "A Clear Path to Cleaner Water: Implementing the Vision of the State Water Board for Improving Performance and Outcomes at the State Water Boards." The "Clear Path" report recommended, among other things, the development of a state storm water policy to guide dischargers and regulators toward environmentally and economically sustainable solutions that make use of the best available scientific methods and data.

This report is a supplement to the "Clear Path" report, summarizing the key developments that have occurred since 2013, including development of the State Water Resources Control Board's "Strategy to Optimize Resource Management of Storm Water," or STORMS program. Through the STORMS program and other actions, the State Water Resources Control Board (State Water Board) is taking actions to optimize the management of storm water in California. For example, the State Water Board is working with the California State University of Sacramento Office of Water Programs on a report to identify and eliminate barriers to storm water capture and use.

Yet proposed actions are not enough, and storm water permittees, industry, municipal water agencies, and other stakeholders can provide valuable insight to the State Water Board. To this end, CCEEB's Water Quality Task Force provides six recommendations that are intended to assist the State Water Board in planning for sustainability, focusing on collaborative, creative solutions, and directing resources most efficiently as to have the greatest impact. CCEEB and its members stand ready and committed to working with the State Water Board in order to ensure that the vision of STORMS becomes a reality.

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RECOMMENDATION 1 - CREATIVE & FLEXIBLE SOLUTIONS

The State Water Board should prioritize clear compliance pathways that allow creative and collaborative approaches to improve water quality, recognize the gap between available resources and implementation needs, prioritize effective source control, and focus on sustainable, multi-benefit solutions to the extent possible.

There is significant concern that traditional regulatory approaches to storm water may drive permittees away from sustainable solutions and source control and toward more traditional treatment approaches, which typically are more energy intensive and have significant environmental impacts. Within the work already being undertaken by STORMS, the State Water Board should develop guidance on alternative implementation and compliance approaches to support creative, collaborative, and sustainable multi-objective approaches to storm water management. Guidance should be consistent with the overall goal of optimizing storm water use, where feasible, and should include direction regarding permit writing, permit compliance, enforcement for storm water management approaches that employ creative solutions, and a focus on effective source control.

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RECOMMENDATION 2 - OPTIMIZE USE

The State Water Board should regulate storm water as a resource, not as a waste, by establishing program guidelines, implementation tools, and flexible regulatory frameworks that focus on the goal of optimizing the use of storm water, where feasible, as a cost-effective local water supply.

The State Water Board should consider modifying the STORMS process to move the storm water program forward in five-year increments. This will allow the State Water Board to identify a vision for the next implementation period and solicit scientific, economic, and legal expert assistance, in addition to broad stakeholder input. The State Water Board then can quickly apply lessons learned to address specific questions, gather necessary data, and generate guidance and work products to advance storm water use where feasible. This process must also consider a wide variety of local conditions. The State Water Board should provide direction to the regional water boards regarding the structure and expectation of National Pollutant Discharge Elimination System permits issued during the implementation period, the use of data and lessons learned to advance the state's storm water program, and opportunities to use pilot projects to identify ways to align regulations and streamline the regulatory process.

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RECOMMENDATION 3 - IDENTIFY FUNDING

The State Water Board should continue to provide guidance and tools for identifying and securing funding for storm water programs.

It is widely understood that current funding sources and funding strategies are insufficient to meet the high costs of storm water program implementation. The State Water Board should continue to provide guidance and tools to help regulated agencies identify and secure funding, including support related to Proposition 218 rate issues and increased access to California's Clean Water State Revolving Fund, the Drinking Water State Revolving Fund, California Department of Transportation cooperative implementation agreements, and Joint Powers Agreements. In addition, the State Water Board should develop guidance on monetizing the value of storm water, as identified in STORMS, and consider developing "water funds" and other non-traditional funding approaches. The State Water Board should also consider working with the U.S. EPA, Caltrans, local watersheds, integrated regional water management groups, CCEEB, and others to develop a public awareness campaign focused on the importance of storm water funding, particularly in metropolitan areas where costs are very high.

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RECOMMENDATION 4 - SOLID ECONOMICS

The State Water Board should establish guidelines for better assessing and incorporating economics into the state's storm water program. These guidelines should explicitly acknowledge and address funding and financial considerations.

Effective storm water management is expected to be extremely costly. To support program development, the State Water Board should develop reliable methods for estimating implementation costs and determining the financial resources available to comply with storm water regulations and permit requirements. These methods should include a process similar to U.S. Environmental Protection Agency's Financial Capability Assessment framework and provide guidance that prioritizes sustainable, multi-benefit, cost-effective projects over projects that focus solely on storm water treatment.

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RECOMMENDATION 5 - SOUND SCIENCE

The State Water Board should continue to incorporate best available science and engineering practices and targeted data collection within the STORMS process to address technical issues.

Uncertainty regarding the exact measures needed to achieve existing storm water requirements stems, in part, from an incomplete understanding of certain technical aspects of storm water management. Knowledge limitations include key data gaps, such as the technical requirements for Reasonable Assurance Analysis used in watershed approaches to storm water management, appropriate methods for calculating numeric permit limits, guidance regarding the use of design storms, and guidance regarding natural, background, and uncontrollable sources. The State Water Board should continue to make use of best available science within the STORMS process to address the technical shortcomings of the current regulatory approach.

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RECOMMENDATION 6 - SOLICIT EXPERTISE

The State Water Board should develop a process of soliciting expert technical and legal assistance, including utility practitioners, to address barriers to storm water capture and use, and participate in the development of legislative remedies where possible.

Storm water capture and use on a meaningful scale is hindered by a lack of clarity regarding water rights, in-stream flow requirements, and the potential liability associated with capturing and using storm water. In addition, site and region-specific considerations may preclude on-site capture and use. It also important to consider how the state's storm water program interacts with other state policies and programs and with other aspects of water management, particularly at the local level. The alignment of programs will reduce overlapping and conflicting requirements, schedules, and planning efforts, thereby improving the efficiency and effectiveness of water management.[1]

Complex issues such as these may require legal and technical expertise beyond that currently envisioned by the STORMS process. The State Water Board should enlist expert assistance and consider participating in pilot projects to address these potential hurdles. The State Water Board should also find ways to provide independent expert assistance to resolve technical or legal disagreements on individual projects, and identify situations where legislative remedies may be needed to address specific technical and legal barriers.

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Storm Water

In California, storm water is defined by the State Water Code Section 10561.5 as "temporary surface water runoff and drainage generated by immediately preceding storms," and dry weather runoff is defined as "surface water flow and water flow in storm drains, flood control channels, or other means of runoff conveyance produced by non-storm water resulting from irrigation, residential, commercial, and industrial activities." The State and Regional Water Boards issue municipal separate storm sewer system (MS4) permits to regulate both storm water and dry weather runoff. Non-storm water discharges through an MS4 permit are generally prohibited unless authorized under a separate permit by the U.S. EPA.

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Unique Challenges

In the arid west, storm water poses unique regulatory and compliance challenges, but also opportunities. In contrast to traditional point sources, storm water exhibits highly variable flow rates and volumes. Constituent concentrations may vary by an order of magnitude over the course of an hour or less, and just as widely between storm events or between sites in close proximity. Constituents can enter storm flows from localized anthropogenic activities such as urban and agricultural pesticide applications, natural sources such as soils and wildlife, and from distant, diffuse sources such as atmospheric deposition from regional and global sources. There is significant uncertainty regarding the most sustainable and efficient measures to control storm water and the efficiency of commonly used best management practices and controls.

Storm water quality is a complex function of watershed size, slope, soils, vegetation, rainfall magnitude and intensity, antecedent conditions, land use, and climate.

Although storm water represents a potential resource, its episodic nature makes it particularly difficult to capture and use in water supplies. Much of the state's storm water infrastructure was built in response to catastrophic flood events and was designed to transport water as efficiently as possible out of watersheds. Variations in geography, geology, and the ability to store storm flows mean that storm water management must be highly site or region-specific. There is no "one size fits all" approach to managing storm water.

Addressing the most pressing threats to water quality and incorporating storm flows, including dry weather flows, into the state's water supply will require integrated solutions that cross the boundaries of individual agencies, water quality permit holders, and even watersheds. It will also require significant financial resources, as current funding levels appear to be less than current costs. Present regulatory approaches do not recognize these resource limitations and have not addressed many of the scientific and technical issues regarding storm water. For example, the current regulatory program treats storm water as a "waste" and discourages its integration into regional water supplies. For storm water capture and use, no clear path to compliance is easily identified.

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Regulatory Framework

California's Porter-Cologne Water Quality Control Act authorizes the State Water Resources Control Board and its nine regional water boards to implement the federal Clean Water Act and state water quality regulations. In the 1970s, California developed water quality standards in Water Quality Control Plans, or basin plans, for each of the state's nine regional water boards, and detailed analyses were performed for six public interest factors, including water quality conditions that could be reasonably achieved through the coordinated control of all factors and economic considerations. Water quality standards were used to develop permits under the National Pollutant Discharge Elimination System (NPDES) for discharges from point sources, such as wastewater treatment plants and industrial process water discharges. At that time, storm water was considered a nonpoint source and limited data were available to characterize storm water. Storm water was believed to be both uncontrollable and a minor source of pollutants.

Although substantial investments in point source controls resulted in significant water quality improvements, water quality standards were still exceeded on occasion in many of the nation's waters. In response, the federal Clean Water Act was amended in 1987 to add programs for certain storm water discharges, including discharges associated with industrial activity and discharges from municipal separate storm sewer systems (MS4). Storm water discharges from MS4 systems were required to be controlled to the maximum extent practicable through best management practices (BMPs) and "good housekeeping" implementation measures.

The challenge of regulating storm water arises, in large part, from implementation of TMDL requirements in storm water permits.

Section 303(d) of the Clean Water Act provides for the listing of water bodies as "impaired" when they do not meet water quality standards and includes requirements to develop Total Maximum Daily Loads (TMDLs) specifying the amount of a particular pollutant that may be present in these water bodies. TMDLs have been developed in California since the late 1990s. TMDLs allocate the existing and allowable pollutant loads among point and nonpoint sources and are intended to provide the basis for attaining and maintaining water quality standards. NPDES permits, including those for certain storm water discharges, are required to be consistent with the requirements of TMDLs. Much of the challenge of regulating storm water arises from the implementation of TMDL requirements in storm water permits. Many permittees feel TMDL implementation has resulted in increasingly stringent permit terms and an expansion of the scope and cost of regulatory requirements imposed upon storm water dischargers.

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For storm water, no clear path to compliance is easily identified. Only by recognizing the unique nature of storm water discharges, addressing resource limitations and technical challenges directly, and providing clear direction to the regulated community can the state's storm water program be moved forward efficiently and effectively.

Progress

In June 2013, CCEEB published "A Clear Path to Cleaner Water: Implementing the Vision of the State Water Board for Improving Performance and Outcomes at the State Water Boards." The "Clear Path" report recognized that much remained to be done to address water quality issues, and resources to do so were limited. The report presented a framework meant to help the California water boards identify priorities and improve water quality outcomes. Eight recommendations were provided, which included improving the regulatory process, emphasizing and promoting sustainable solutions, developing a storm water policy, improving the use of scientific data, incorporating best available science and engineering into decision making, and developing standard economic analysis procedures.

Since the publication of the Clear Path Report in 2013, multiple events have affected the perception of storm water management in California.

The statewide drought that began in 2012, which persisted and worsened, led to a drought emergency and water use restrictions. Then heavy winter rains in 2016–2017 temporarily ended the drought but brought flooding to many regions of the state. These events highlight the episodic nature of storm flows, the fragility of the state's flood protection infrastructure, and the state's vulnerability to future changes in climate and hydrology.

At the regulatory level, in 2014, the state adopted the California Water Action Plan, which established ambitious goals to manage the state's water resources for greater resiliency and reliability.[2] This included preparation for dry periods, expansion of water storage capacity, improvements to groundwater management, and increased flood protection.

Seeking to further strengthen the state's water resources, the State Water Board adopted a "Comprehensive Response to Climate Change," which prioritizes storm water capture, detention, and infiltration as a means of augmenting local water supply and increasing water supply reliability to promote climate change adaptation.[3] The State Water Board also adopted a policy on the "Human Right to Water," emphasizing the right of every person to a safe, clean, affordable, and accessible water supply.[4] It outlined the water boards' obligation to address discharges that could threaten contamination of sources of water used for drinking water supply, including both surface and groundwater.

The state's storm water program has also seen significant changes. In 2015, the State Water Board affirmed the use of watershed management programs within municipal storm water permits.[5] These programs include customized strategies, control measures, and best management practices for effective storm water management. The ruling affirmed the state's discretion to require strict compliance with water quality standards.

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PRINCIPLES FOR WATER QUALITY REGULATIONS

The California Council for Environmental and Economic Balance (CCEEB) convened a Water Quality Task Force in 2012 intended to assist the State Water Board in planning for sustainability, focusing on collaborative, creative solutions, and directing resources efficiently as to have the greatest impact. The task force is comprised of CCEEB members and other stakeholders, primarily municipal water agencies and smaller cities, who have expertise in water quality permitting and mitigation projects. It is guided by three principles for water quality regulation:

- The state must increase focus on clean water outcomes; emphasize collaboration, creativity, and problem-solving to address water quality problems; and promote sustainable and multi-benefit solutions that integrate storm water with water supply and wastewater needs.
- The water boards must develop standardized economic analysis procedures to help set priorities and determine the most effective and efficient means to improve water quality.
- The state must improve and increase its use of data, scientific research, and planning to better inform the public, respond to current and future water quality problems, and improve accountability for achieving goals and standards.

The State Water Board's decision followed the 2014 adoption of the Industrial General Permit (IGP) for storm water runoff from industrial facilities, which included numeric action levels.[6] The State Water Board is currently working to integrate TMDL requirements into the IGP.

Since 2013, several reports have underscored the difficulty that cities and counties encounter in funding storm water management and control measures. A 2014 report highlighted the difficulty of identifying a sustainable revenue source for storm water management in Los Angeles County.[7] In November 2014, a report by the U.S. Council of Mayors found that a substantial number of Southern California households spent more than 4.5 percent of median household income on water, sewer, and flood control, exceeding the U.S. EPA's affordability criteria and placing these households at risk of financial distress.[8] And while Proposition 1, a water bond measure, included funding for water projects—such as surface and groundwater storage, watershed protection and restoration projects, drinking water protection projects, and multi-benefit storm water projects—the available funds for storm water are a proverbial drop in the bucket and fall far short of financial needs.

In 2016, the California Supreme Court found that certain provisions of the Los Angeles municipal storm water permit were "unfunded mandates" because they exceeded federal Clean Water Act requirements.[9] Under the California Constitution, a local government is entitled to reimbursement from the state for costs associated with a new program or higher level of service when mandated by the state. The regional boards are working to determine how to proceed with the municipal storm water permit program in the wake of the court's ruling, and several additional unfunded mandate cases are pending.

In response to the "Clear Path" report and concerns voiced by other stakeholders, the State Water Board has taken several

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actions, including the development of a Storm Water Strategic Work plan.[10] This effort, later renamed the "Strategy to Optimize Resource Management of Storm Water," or STORMS, included an Implementation Committee convened to provide guidance to the STORMS process. The Implementation Committee has identified projects intended to provide a road map for the water boards to "decrease storm water pollution, increase storm water use, and improve water quality, including regulatory mechanisms, incentives, legislation, and resources."[11]

This report supplements the 2013 "Clear Path" report and provides six recommendations intended to assist the State Water Board in planning for sustainability, focusing on collaborative, creative solutions, and directing resources so as to have the greatest impact. To support implementation, linkage and suggestions for each STORMS objectives and projects follow each of the report's six recommendations.†

THE STATE WATER BOARD HAS IDENTIFIED SIX BROAD OBJECTIVES WITHIN STORMS PROCESS:

1. INCREASE STORM WATER CAPTURE AND USE THROUGH REGULATORY AND NON-REGULATORY APPROACHES
2. INCREASE STAKEHOLDER COLLABORATION ON A WATERSHED SCALE
3. ESTABLISH PERMIT PATHWAYS TO ASSESS STORM WATER PROGRAMS
4. ESTABLISH FINANCIALLY SUSTAINABLE STORM WATER PROGRAMS
5. IMPROVE AND ALIGN STATE BOARD OVERSIGHT OF WATER BOARD PROGRAMS AND WATER QUALITY PLANNING EFFORTS
6. INCREASE SOURCE CONTROL AND POLLUTION PREVENTION

† Linkage is provided to establish actions that can be taken to support the optimization of storm water within the STORMS process. Appendix A provides a matrix for all recommendations and STORMS objectives and projects. Appendix B summarizes all recommendations of this report.

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Recommendations

The six recommendations are intended to assist the State Water Board in planning for sustainability, focusing on collaborative, creative solutions, and directing resources efficiently so that it has the greatest impact.

1. Creative & Flexible Solutions
2. Optimize Use
3. Identify Funding
4. Solid Economics
5. Sound Science
6. Solicit Expertise

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1 CREATIVE & FLEXIBLE SOLUTIONS

The State Water Board should prioritize clear compliance pathways that allow creative and collaborative approaches to improve water quality, recognize the gap between available resources and implementation needs, prioritize effective source control, and focus on sustainable, multi-benefit solutions to the extent possible.

CCEEB's 2013 "Clear Path" report highlighted several sustainable, multi-benefit projects that have been implemented to manage storm flows. These types of approaches have been lauded as models for storm water implementation and are consistent with U.S. EPA guidance that "strongly encourages the use of green infrastructure and related innovative technologies, approaches, and practices to manage storm water as a resource, reduce sewer overflows, enhance environmental quality, and achieve other economic and community benefits."[12] By prioritizing creative and flexible solutions, the State Water Board can leverage funding, economics, sound science, and stakeholder expertise, along with supporting the development of new technologies that optimize storm water use, including dry weather flows for sustainable, multi-benefit solutions.

Minor modifications to the state's regulatory approach could result in broad benefits, such as focusing on true source control and promoting the use of sustainable solutions that would enhance regional water supplies and recreational opportunities, in addition to improving water quality.

However, permittees are concerned that the state's current regulatory approach to storm water may not foster sustainable solutions and, instead, advances more traditional types of treatment approaches, which typically are more energy intensive and have significant environmental impacts. Permittees believe that without addressing the key issues, the current regulatory approach will ultimately require costly treatment controls yet will not be conducive to multi-benefit or regional projects. Implementation of storm water controls may be delayed or complicated by resource limitations, the efficiency and performance of common control measures, and the difficulty of implementing individual projects, particularly when given the need for multiple project partners, land acquisition, and environmental permitting approvals. Such limitations need to be considered when assessing permit compliance.

Even minor modifications to the state's regulatory approach could result in broad benefits, such as focusing on true source control[‡] and promoting the use of sustainable

‡ True source control is the elimination of pollutants at their source. For example, true source control would eliminate or significantly reduce the pollutant content of consumer products, minimizing the need for operational source control measures and reducing the risk that storm water will come into contact with pollutants.

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solutions that would enhance regional water supplies and recreational opportunities, in addition to improving water quality.

In coordination with the technical and economic analyses recommended in this report, the State Water Board should guide the regional boards in establishing regulatory requirements and permit terms that can allow greater flexibility in implementation of regulations, recognize local and site-specific constraints, and promote the use of sustainable solutions and true source control. The State Water Board should evaluate ways to maximize the use of existing infrastructure, such as assessing whether unused capacity in publicly owned treatment works and conveyance systems could be used to treat some portion of dry or wet weather storm flows.

Guidance should detail the strategies, within the authority provided by the Porter-Cologne Water Quality Control Act, that could be used to provide flexibility, including trading and offsets, variances, compliance schedules, and water fund concepts, and should also indicate the data and findings needed to demonstrate permit compliance. Information from pilot projects could be used in the development of guidance, which should explicitly address permit compliance and be updated periodically, as our knowledge of storm water evolves. The State Water Board should also consider statewide variances or similar means to allow time for source control efforts to take effect. Any guidance should provide a clear path to compliance for permittees who choose creative, collaborative, and sustainable approaches to managing storm water.

LINKAGE WITH STORMS COMPONENTS *

- Objective 3 – Project 3a: Amend the project to identify alternative compliance approaches already available and approaches to be developed during the first five year implementation schedule.
- Objective 2 – Projects 2a and Objective 3 – Project 3a: Add project to identify and facilitate development of alternative compliance approaches that can enable collaboration with the regulated community.
- Objective 3 – Project 3c: Add project to develop permit language to allow compliance demonstrations for alternative and collaborative compliance approaches.
- Objective 6 – Project 6b: Amend project to develop, in potential partnership with the California Stormwater Quality Association, a list of pollutants in storm water that could be addressed through true source control. Consider opportunities for enhanced collaboration with other agencies such as the Department of Pesticide Regulation, U.S. EPA, and groups such as the California Product Stewardship Council. Expand public outreach efforts to further educate the public about the sources of pollutants and the cost effectiveness of true source control.

* Following each recommendation, linkage to the applicable State Water Board's STORMS objectives and projects and advised actions are provided. Appendix A provides a connection matrix for all STORMS objectives and projects and recommendations.

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CREATIVE SOLUTIONS TO COMPLEX PROBLEMS

To support creative solutions, the CCEEB Water Quality Task Force identified a pilot project that highlights the complexity of multi-jurisdictional storm water capture projects.

The pilot project will capture discharges from two cities in the Los Cerritos Channel and the Lower San Gabriel River watersheds in Los Angeles County. It will be sited at Caruthers Park in Bellflower. The project is being planned in coordination with both the Los Angeles Regional Water Board and the State Water Board. Many key issues remain to be resolved, including treatment requirements for the captured storm water and engineering details. The total project cost of approximately $13 million will be funded through a Cooperative Implementation Agreement with Caltrans.

The Caruthers Park Water Capture Project is being designed with a capture volume of 9.7 acre-feet, the optimal volume for pollutant load reduction at the site, and will capture an estimated average of 740 acre-feet of storm water per year. Captured storm water will be treated and used for irrigation in place of potable water and reclaimed water. In addition, the possibility of blending treated storm water with reclaimed water is being explored with the Central Basin Municipal Water District, which supplies reclaimed water to many irrigation and industrial users in Bellflower and other nearby cities.

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2 **OPTIMIZE USE** The State Water Board should regulate storm water as a resource, not as a waste, by establishing program guidelines, implementation tools, and flexible regulatory frameworks that focus on the goal of optimizing the use of storm water, where feasible, as a cost-effective local water supply.

The State Water Board's STORMS process was designed to help the state in "reclaiming storm water as a resource to improve water quality and quantity."[12] The STORMS process recognized both the urgent need to protect water quality and the promise of storm water, both today and for the future, as a viable source of water. The STORMS process has outlined a number of individual projects intended to help the state realize its vision for storm water—that is, to recognize storm water as a valuable water resource and not as a waste, to preserve watershed processes and improve water quality, to increase the efficiency and effectiveness of the state's regulatory programs, and to focus on collaborative solutions.

As detailed throughout this report, the regulation of storm water, including dry weather flows, poses complex legal, technical, economic, and regulatory challenges. CCEEB expects that the development of the state's storm water program will be an iterative process; lessons learned from initial implementation efforts will guide the process in the future.

Many of the issues identified in the STORMS process are strongly interrelated. Lessons learned from one issue will affect the way the State Water Board addresses the remaining issues. CCEEB's Water Quality Task Force is concerned that the STORMS process, while having identified many key technical and legal issues, has not provided clarity regarding how such issues will be addressed. For example, it is not clear to storm water permittees which investments represent the best approach to plan, fund, and implement programs to improve water quality and enhance local water supplies, and to do so with assurance that their efforts will be consistent with the regulatory obligations imposed by storm water permits.

CCEEB recommends that the State Water Board select a subset of the entire list of implementation issues to be addressed in a five-year program implementation period.

For these reasons, CCEEB recommends that the State Water Board select a subset of the entire list of implementation issues to be addressed in a five-year program implementation period. This would be consistent with the typical duration of an NPDES permit and actions needed to issue or renew storm water permits. It will also provide greater opportunity for State Water Board staff to engage in an iterative process with board members for direction and policy setting.

The State Water Board could begin by prioritizing efforts that would remove barriers to storm water use, define appropriate treatment standards for different end uses of storm

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water, and identify the best approaches for cost-effectively maximizing the amount of storm water that can be incorporated into local water supplies. Opportunities also exist to develop guidelines to incorporate site-specific conditions into storm water management and implementation program decisions, including appropriate actions where storm water capture and use are not feasible.

For each five-year implementation period, the State Water Board should identify the specific questions to be addressed, the data and processes needed to answer those questions, and the work products to be produced as a result of its investigation. In doing this, the State Water Board should solicit assistance from scientific, economic, and legal experts, as well as public stakeholders. At the beginning of each five-year period, the State Water Board should provide direction to the regional boards regarding the structure and expectation for NPDES permits issued during the term, including how compliance could be demonstrated. Toward the end of each five-year period, the State

STRINGENT PERMIT LIMITS MAY DRIVE PERMITTEES AWAY FROM SUSTAINABLE SOLUTIONS

Most water quality standards, and the methods used to calculate permit limits from those standards, were developed before the Clean Water Act was amended to consider storm water as a point source. As a result, many of the assumptions used to develop permit requirements and calculate effluent limits are not suitable for storm flows. Few data sets are available to characterize storm flows, or the variability of effluent concentrations from control measures.

In addition, some water quality criteria were developed under laboratory or low-flow conditions and may be more stringent than necessary to protect beneficial uses during storm flow conditions. Adjustments to criteria should be considered in those situations, such as water effects ratios or biotic ligand models that could be used to adjust criteria for certain metals, such as copper and zinc.

A focus on stringent permit limits may drive permittees away from sustainable, multi-benefit solutions that utilize natural landscape processes and toward treatment solutions, which typically involve more hardscaping, greater energy use, and greater waste generation, and which ultimately may be more costly to implement.

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Water Board would use the results from the current implementation period to define the next set of questions to be addressed and clarify the expectations of storm water permittees for the ensuing five years.

As detailed in the "Clear Path" report, the State Water Board should consider the five mechanisms previously identified by experts commissioned to assist the State Water Board, regional boards, and the STORMS Implementation Committee. The five recommended mechanisms are:

1. "Blue Ribbon" panels of scientific experts and practitioners that can provide advice and guidance on specific technical or economic issues.
2. A science advisory panel and an economic advisory panel available to the regional boards to provide technical review and comment on permit development, field studies, and data interpretation.
3. A pool of in-house experts from the water boards and other state agencies, such as the Department of Water Resources, that would be available to the regional boards on an as-needed basis. For example, expertise could support work on economic analysis or risk assessments.
4. A mechanism for contracting with independent outside experts when needed for highly technical issues.
5. Collaboration with other state agencies, particularly the Department of Water Resources, to determine the extent that multiple planning requirements support, or fail to support, an integrated approach to water management. Case studies could be used to develop recommendations for both regulatory and funding changes consistent with California Water Code Section 10608.50, to ultimately improve the alignment of state-required plans and better support the integrated management of water at a regional level.[14]

LINKAGE WITH STORMS COMPONENTS

- Objective 3 – Project 3a: Add project to develop guidance for compliance evaluations and receiving water limitations language.
- Objective 3 – Project 3c: Assess municipal storm water program monitoring and effectiveness.
- Objective 3 – Project 3d: Implement project to establish a statewide regulatory framework.
- Objective 5 – Project 5a: Implement project to define data needs and consider pilot or targeted data collection to inform and advance program.
- Objective 5 – Project 5b: Amend project to identify storm water permit compliance measures for five year term.

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3 IDENTIFY FUNDING The State Water Board should continue to provide guidance and tools for identifying and securing funding for storm water programs.

It is widely understood that the costs of storm water program implementation are significant, and current funding sources and strategies are insufficient to meet program costs. Adding to this challenge is the need to consider technology availability and feasibility in any funding or funding strategy.

Fees for storm water management can play an important role in establishing constant revenue sources. California's Proposition 218 provides that every fee, except fees for "sewer, water, or refuse collection services," must be ratified by either a majority of property owners or by a two-thirds majority of the general electorate subject to the fee. The California courts had previously determined that storm water management does not constitute "water service," and is thus subject to Proposition 218's stringent election requirements. To date, no large municipality has successfully passed a post-Proposition 218 fee for its storm water management program. However, several smaller communities, especially those near the coast, have successfully established storm water fees. With the passage of Senate Bill 231 (Hertzberg, Chapter 536, Statues of 2017) important access for storm water funding has been secured, provided it can withstand expected legal challenges.

The State Water Board should continue to provide guidance and tools for securing funding, such as those currently being developed in the STORMS process. Potential additional funding measures to consider include:

California's Clean Water and Drinking Water Revolving Funds

The Clean Water State Revolving Fund (CWRSF) provides low-cost financing for the planning, design, and construction of publicly owned water quality projects, including wastewater treatment plants, water recycling facilities, and storm water reduction and treatment facilities. The State's Drinking Water State Revolving Fund (DWSRF) may provide yet another source of funding for storm water implementation, particularly for projects that involve the development or protection of drinking water sources. However, obtaining funds requires a dedicated repayment stream, and most storm water management agencies do not have fees or rates for storm water management that can support a steady repayment. The State Water Board should continue to investigate options for expanding the availability of CWSRF and DWSRF funds to municipalities for storm water implementation measures that offer cost-effective benefits for drinking water supplies or wastewater quality.

Monetizing storm water

The State Water Board should continue to evaluate options to leverage existing infrastructure projects and create opportunities for expanding storm water capture. Guidance could be taken from the California Urban Water Agencies 2016 report

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"Potential for Urban Stormwater as a Water Supply."[15] Opportunities to monetize storm water should also be evaluated through implementation of the related STORMS project, so that the value generated by storm water capture and supply augmentation can in turn be used to facilitate additional storm water capture projects, low impact development, and other needed storm water controls. That said, monetizing storm water would likely be difficult. Some existing groundwater basin adjudications will be barriers. In addition, water purveyors have become accustomed to taking advantage of flood control districts infiltrating water at no charge to the water companies or districts. The State Water Board could consider pilot projects, such as those funded by DWSRF, for evaluation of partnerships between storm water agencies and groundwater or drinking water entities that are building urban storm water capture systems for water supply and other benefits.

Water funds

Water funds are one potential method that could be used to implement large scale infiltration or storm water capture projects, to the extent that doing so is cost-effective. Water funds are models of long term conservation that function through investments focused on a specific fund.[16] Resources generated by each fund are in turn distributed to projects within a watershed to preserve lands or implement conservation actions. A water fund could allow downstream dischargers or water users to invest in upstream conservation and restoration activities to improve water quality and augment water supplies. Such an approach could incentivize partnerships among local governments, private businesses, non-governmental organizations, regulatory authorities, and grassroots groups, or even be legislated as a fund at the state level. Water funds have been used extensively by The Nature Conservancy to fund large scale regional projects, such as installing enhanced storm water drainage for crop fields in rural areas, or for enabling urban areas to fund needed improvements of shared infrastructure and watershed protection measures.[17] The frameworks developed for other regions could be evaluated to assess their suitability for use as part of the state's regulatory programs, and to determine how permits would be structured to provide a pathway to compliance for permittees who choose to implement or participate in water funds.

Caltrans cooperative implementation agreements

The MS4 permit issued to the California Department of Transportation (Caltrans) was amended in 2014 to include a series of requirements related to TMDLs.[18] One of these requirements specifies that Caltrans is required to earn 1,650 compliance units (CU) per year, where a CU is defined as one acre of Caltrans right of way treated in a TMDL watershed in which Caltrans is a listed stakeholder. The financial equivalent, as submitted by Caltrans, is $176,000 per CU. In an effort to encourage collaboration and cooperative implementation agreements, the State Water Board discounts CUs by 50 percent. This sets the CU equivalent at $88,000. Caltrans has limited funds available to spend on cooperative implementation agreement projects, and funds available for projects vary from year to year. To date, Caltrans has entered into six agreements in the Los Angeles metropolitan area and three in the San Francisco Bay Area for a total of $116 million over seven years. As of this writing, no money is available to fund additional agreements. Further support for Caltrans cooperative implementation agreements could come by adapting permits and funding mechanisms to bolster alternative compliance options.

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Joint Powers Agreements

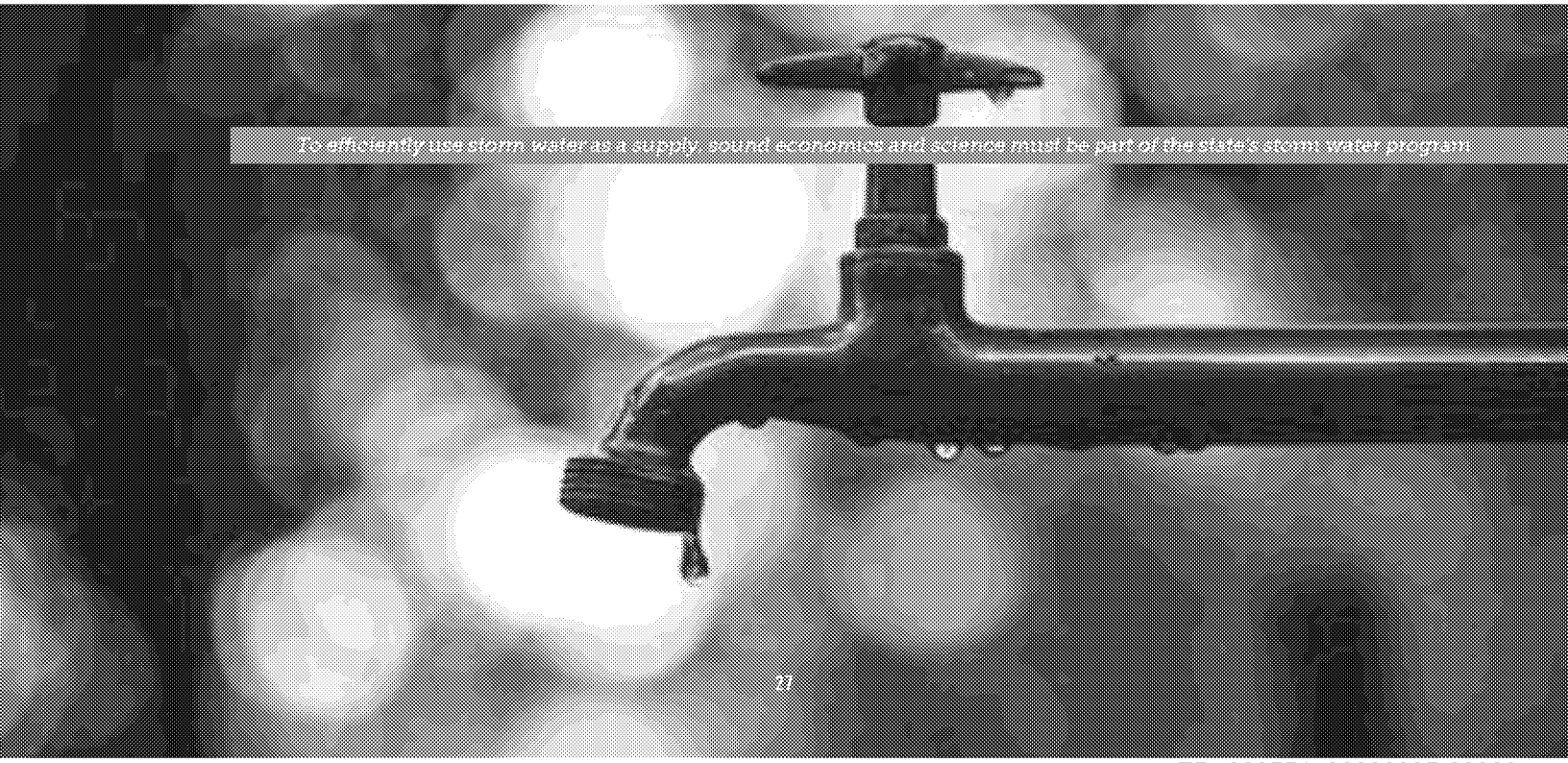
Joint Powers Agreements (JPAs) may offer an opportunity for cost sharing between the water boards and other public agencies. For example, the California Storm Water Quality Association (CASQA) and the State Water Board are working toward the formation of a JPA that would make it easier for municipalities to implement joint projects.

Trading and offsets

Trading can allow a permitted discharger to meet pollutant reduction requirements using reductions created by another source at lower cost. Both point and nonpoint source reductions can be used in trading. Offsets operate similarly and allow a new or expanded discharge provided that the pollutant load from a source is offset by a reduction in load from another source. The State Water Board should provide guidance on how trading and offset programs could be established, and how they could be used to fund storm water implementation measures. See also Recommendation 5, Sound Science.

LINKAGE WITH STORMS COMPONENTS

- Objective 4 – Project 4b: Identify funding for storm water capture and use and expand the project description to include funding for alternative compliance mechanisms (See also Recommendation 1, Creative Solutions) and opportunities to test implementation and funding alternatives using pilot projects.



To efficiently use storm water as a supply, sound economics and science must be part of the state's storm water program.

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4 SOLID ECONOMICS The State Water Board should establish guidelines for better assessing and incorporating economics into the state's storm water program. These guidelines should explicitly acknowledge and address funding and financial considerations.

Recommendation 4a: The State Water Board should consider developing consistent and reliable methods for estimating costs so that regulators, the regulated community, and the public have a clear and realistic understanding of program funding needs.

Effectively managing storm water, including dry weather runoff, is critical for the state, but storm water discharges are far harder and more expensive to control than traditional point sources. Each region has unique topography, hydrogeology, climate, and rainfall characteristics. Many areas are highly urbanized, and existing infrastructure was not designed to capture or treat storm water. Storm water management costs increase exponentially as the volume of water and the level of treatment increases.

In light of these challenges, there is widespread agreement that properly managing storm water will require an extraordinary commitment of resources. For example, cost estimates for implementing MS4 permit requirements in the Los Angeles region, either as numeric limits or in the form of watershed management plans, range from the tens to hundreds of billions of dollars.

Consistent with Recommendation 2, Optimize Use, cost estimates for programs should be developed in five-year increments, with defined implementation requirements. This allows the regulated community, the public, and regional boards to have a clear understanding of and expectations for program development and budget needs. Expert assistance should be obtained as needed to develop reliable methods for estimating program costs.

Recommendation 4b: The State Water Board should consider developing methods for storm water permittees to use to determine their financial capabilities and obligations, and to establish implementation procedures so that limited resources are focused on the most pressing concerns.

Following adoption of the Clean Water Act in 1972, the federal government established a major public works financing program to fund upgrades to municipal wastewater treatment plants. In contrast, federal and state agencies have not provided similarly sufficient funding to address regulatory obligations for storm water discharges. Compounding the problem, most cities and counties cannot assess fees or raise rates to fund storm water quality controls, and instead must fund these programs from general funds, where storm water programs compete for scarce resources with more traditional public services, like fire and police departments, parks, and libraries.

While cities and counties have numerous programs to improve water quality and implement MS4 permits, the state's storm water program does not include a comprehensive planning framework that can clearly prioritize water quality investments in a cost-effective and environmentally responsible manner. The current

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storm water framework, including provisions for watershed management plans, lacks a means to balance the substantial investments required under the MS4 permits with other competing priorities.

The State Water Board should develop a process similar to the U.S. EPA's Financial Capability Assessment (FCA) framework for analyzing a municipality's costs and ability to pay for water-related services in an integrated water management approach, which would include drinking water, wastewater, recycled water, and flood control in addition to storm water.[19] The FCA framework can be used to determine the affordability and phasing of programs and controls required by the state's storm water program and would assist municipalities in focusing implementation measures on the most critical water quality programs and controls at the least cost. The FCA framework can also be used to assess and address impacts to disadvantaged communities, and to give those communities a greater voice in establishing implementation priorities and realizing the benefits of integrated storm water planning.[20]

The state FCA should include a description of the community, including its demographic characteristics and a list of the projects and programs that are contemplated over a five-year implementation period. For each project and program, the state FCA should include a schedule that details the planning and design, funding, permitting, bidding, and construction stages, including any land acquisition plans and uncertainties that could affect project implementation. The affordability analysis should include a detailed review of the financial resources of the watershed's communities together with the expenditures needed to support various public service objectives.

The state's storm water program does not currently provide any means for municipalities to balance competing obligations and determine reasonable resource commitments needed for storm water implementation.

Finally, the state FCA should include an evaluation of auxiliary benefits and impacts of each potential implementation measure. Benefits could include water supply and the addition or enhancement of green space, while impacts could include greenhouse gas emissions, energy use, and waste generation. The benefits and impacts would be used, together with information on financial capabilities, to assess and establish program priorities.

The State Water Board should also allow municipalities to use an integrated planning framework (IPF) to establish long-term sustainable compliance with Clean Water Act, based upon an attainable schedule. IPFs allow voluntary planning efforts to meet multiple Clean Water Act requirements by identifying efficiencies for separate waste water, water supply, and storm water programs. This approach would allow sequenced investments to fund highest priority projects first, while considering a municipality's ability to pay. Municipalities can plan IPFs to prioritize a city's Clean Water Act obligations, without having to fully commit to implementing them. Implementation would only occur once an IPF is incorporated into the municipal permit and funding sources have been secured.

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The State Water Board should provide guidance or a framework to prioritize projects that maximize the beneficial use of storm water over projects that focus solely on storm water treatment. For example, a project that is designed to capture storm water flow for direct use or to augment storage in a drinking water aquifer should be funded preferentially over a project that implements best management practices but does not increase local storage or regional water supply. The State Water Board should also consider prioritizing implementation of large-scale regional projects that could combine the resources of multiple agencies in order to realize greater benefits than smaller projects implemented by individual agencies. The State Water Board may also wish to develop guidelines or metrics that could be used to focus resources on the most economically feasible measures.

Recommendation 4c: The State Water Board should consider developing consistent methods for evaluating the cost-effectiveness and benefits of storm water capture projects.

In partnership with the California Urban Water Agencies, the State Water Board should evaluate strategies that encourage storm water capture. Any strategy should encourage development of storm water capture projects, including guidance on the consideration of local conditions and the prioritization of projects based on cost-effectiveness and accounting for the multiple benefits that can be realized by capturing storm water.[21] The State's Storm Water Resource Plan and Storm Water Grant Guidelines can be used to develop permit requirements that prioritize projects and implementation measures intended to address an urgent public health or environmental threat.[22]

Many storm water projects currently in development have a large cost per volume of storm water captured, as determined by dividing the total project cost by the expected volume of captured storm water during the project's life. However, such calculations do not recognize the multiple additional benefits that may result from these projects, including environmental enhancement, water quality improvement, and flood control. Clear guidance on evaluating the cost-effectiveness and benefits of storm water capture projects will provide a means of evaluating implementation alternatives, establishing priorities, and optimizing the use of storm water in consideration of local and regional factors.

LINKAGE WITH STORMS COMPONENTS

- Objective 4 – Project 4a: Amend to include development of methods for estimating financial capabilities and establishing implementation priorities.
- Objective 4 – Project 4c: Amend to include a process to identify MS4 permit compliance cost estimation methods and to identify methods for evaluating the cost-effectiveness and benefits of storm water capture projects.

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5 SOUND SCIENCE The State Water Board should continue to incorporate best available science and engineering practices with targeted data collection within the STORMS process to address technical issues.

Substantial debate regarding the ultimate costs of the state's storm water program revolves around uncertainty regarding the exact measures needed to achieve water quality standards. Many cities and counties are concerned that strict compliance with water quality standards will only be possible if structural treatment controls are implemented, while other stakeholders believe that BMPs and regional implementation approaches will suffice.

The State Water Board should consider selecting key technical areas for further evaluation during each five-year implementation term and obtain both expert scientific and engineering advice as well as public input. Technical areas should be evaluated in collaboration with permittees using real, not hypothetical, watersheds, implementation options, and projects. It is anticipated that evaluations would extend over multiple five-year implementation periods, and that the specific technical areas to be evaluated would depend upon the direction and priorities established by the State Water Board through the STORMS process.

Infiltration technology guidance

Retention and infiltration measures are required by many of the state's MS4 permits but may not always be possible due to tight soils, underlying soil or groundwater contamination, space and siting constraints, or the lack of a water supply benefit. The State Water Board should provide guidance on the siting and design of infiltration technologies, such as dry wells, including implementation alternatives and clear expectations for cases where on-site retention and infiltration is infeasible.

Appropriate treatment standards based on end use

Some local agencies have developed guidelines requiring extensive treatment before captured storm water can be used on-site or infiltrated to perched or deep groundwater aquifers. The State Water Board should review technical information regarding pollutant removal efficiencies in the subsurface, the treatment processes used to treat groundwater prior to use, and the potential exposures that may occur during beneficial use in order to develop requirements that protect human health and the environment but avoid over-regulation. Providing clarity on treatment requirements will assist in project planning, establishing priorities, and determining project costs.

Trading and offsets

Trading and offsets can allow a permitted discharger to meet pollutant reduction requirements using pollutant reductions achieved for another source at a lower cost. Trading and offsets can also result in greater pollutant reductions than otherwise would be possible, particularly when point source dischargers utilize trading to address pollutants from unregulated, nonpoint sources such as natural soils or rock

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formations or abandoned mines. The State Water Board should explore trading and offset options to achieve efficient improvements in water quality, including trading among point sources and trading between point and nonpoint sources.

Variances

As of this writing, the State Water Board's draft bacteria policy includes a provision that would authorize the regional boards to adopt variances in accordance with the Clean Water Act. The State Water Board should consider providing guidance describing how the regional boards could use variances in storm water permits to achieve the highest attainable interim use or criteria when it is infeasible to strictly comply with water quality standards. The State Water Board should also consider adopting statewide variances in special circumstances. For example, the use of variances can be used for studies underway to develop new water quality criteria for metals or where true source control efforts represent the most efficient way to achieve pollutant reductions that will occur over time.

Compliance schedules

Similar to variances, the State Water Board should provide guidance regarding the use of compliance schedules in storm water permits to provide time for a discharger to implement controls when immediate compliance with water quality standards is infeasible.

Reasonable assurance analyses

Watershed management programs are currently allowed if MS4 permittees can demonstrate, via a Reasonable Assurance Analysis (RAA), that the watershed program will meet the water quality requirements of the permit. Many RAAs performed to date have focused on retention and infiltration measures, which may not be feasible in all locations or in all watersheds, and make assumptions regarding treatment or BMP efficacy that are not well supported. The State Water Board should continue to develop technical guidance for RAAs.

Efficacy of various treatment approaches

The State Water Board should consider compiling and collecting data to assess the water quality that can be achieved with different approaches to storm water control, ranging from non-structural BMPs to structural treatment controls. Variability and uncertainty should be explicitly addressed in any assessment. The State Water Board should also examine the role it could play in assisting with the development and testing of new technologies.

Deemed compliant approaches

The State Water Board should consider the implementation of deemed compliant approaches, whereby a municipality that installs certain BMPs would be deemed compliant with its NPDES permit. This type of approach has been used in the implementation of trash requirements, including the State Water Board's 2015 Trash Provisions, and is being considered as part of the industrial general permit.

Uncontrollable factors – background and natural sources

The State Water Board should formulate guidance on how uncontrollable factors should be considered in writing permit terms, the extent to which permittees are expected to address sources beyond their control, and the implications of uncontrollable sources for permit compliance. The State Water Board may wish to begin this evaluation by

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reviewing language on uncontrollable sources in the Santa Ana basin plan and by evaluating outcomes from the state's most recent Industrial General Permit.

Numeric limits and reasonable potential

The State Water Board should identify both the circumstances under which numeric measures should be developed for storm water permits and the methodology to calculate those limits, including procedures used to determine reasonable potential, to calculate effluent limitations, and the formulation of receiving water limitations. Analysis of effluent limitations should consider both technology-based and water quality-based limits, in addition to action levels, and evaluate the assumptions made for both effluent discharges and receiving waters, including flow rates (e.g., flow conditions in receiving water, flow rate of effluent discharge), concentration distribution types (e.g., normal, log-normal, or "long-tailed" or "extreme value" distributions), and variability (e.g., coefficient of variation). Analysis should also include recommendations for adjustments to the calculation procedures used for traditional point source discharges.

Design storm and compliance storm

The State Water Board indicated in Order WQ 2015-0075 that compliance with receiving water limitations is and should be the ultimate goal of any MS4 permit, without reference to a design storm or design condition. Because the cost and difficulty of treating storm water rises as the volume of storm water increases, the State Water Board should consider specifying a design storm or design condition as the basis for water quality controls and should clarify how the design condition is to be used in the evaluation of permit compliance, such as whether the design storm is equivalent to a compliance storm. The Los Angeles Water Board's and the State Water Board's work on the Industrial and Construction General Permits may be instructive.[23] The State Water Board should also provide guidance regarding whether the same design and compliance condition should be applied under all circumstances, or how the design condition could be adjusted to account for site-specific factors.

LINKAGE WITH STORMS COMPONENTS

- Objective 1 – Projects 1b and 1c. Amend to address appropriate treatment standards based on end use and provide guidance for infiltration technologies.
- Objective 4 – Projects 3a: Develop guidance specifying alternative compliance approaches for MS4 permits, including trading and offsets, variances, and compliance schedules, and evaluate the potential for statewide variances in special circumstances.
- Objective 5 – Projects 3b, 3c, and 3d: Once specific scientific and technical have been identified for each five-year period, develop technical guidance clarifying how MS4 permits should be written to allow for alternative compliance mechanisms, as well as to specify changes to calculation procedures for RAAs, numeric effluent limitations, and receiving water limitations. Guidance for statewide consistency on MS4 permit requirements, implementation, monitoring, and compliance evaluations is also recommended.

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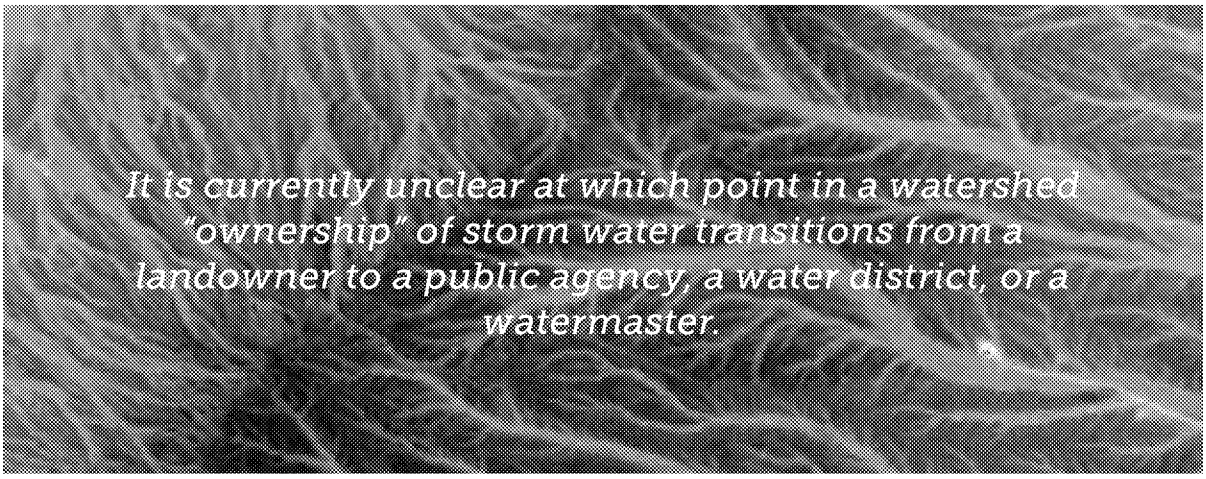
6 SOLICIT EXPERTISE The State Water Board should develop a process of soliciting expert technical and legal assistance, including utility practitioners, to address barriers to storm water capture and use, and should participate in the development of legislative remedies where possible.

Although storm water represents a potentially significant resource that could be used to maximize local water supplies or to replace potable supplies used for irrigation and other purposes, several legal hurdles need to be addressed before this can be realized on a large scale.

Water rights

As the scale of storm water capture increases, conflicts could arise among water users. The State Water Board should consider providing guidance on how to address and resolve potential conflicts related to storm water use and water rights. For example, it is currently unclear at which point in a watershed "ownership" of storm flows transitions from a landowner to a public agency, a water district, or a watermaster. The State Water Board should also explain how competing claims to storm water could be resolved, and how uses of water would be prioritized. See also Recommendation 3, Identify Funding.



In-stream flows

Storm water capture has the potential to change flows in surface water streams, which in turn can affect aquatic life habitat and other beneficial uses. The State Water Board should consider developing guidance to assess appropriate flow requirements for different channel types, analyze how proposed projects may affect in-stream flows, modify projects that would have undesirable impacts on in-stream flows, and resolve conflicts that may arise due to flow impacts.

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Liability associated with storm water capture

In some metropolitan areas, public lands offer the best opportunity for large-scale capture, retention, and infiltration. Yet both public agencies and private land owners are concerned about the potential liability for cleanup or other regulatory obligations if they were to allow those lands to be used for storm water capture. The State Water Board should investigate whether there are means to provide public and private entities with liability protection if they offer land, resources, or funding for new storm water capture and infiltration projects. While legislative remedies are beyond the purview of the State Water Board, they should be considered for future action.

CCEEB anticipates the State Water Board will require expertise beyond what can be provided by the STORMS Implementation Committee to address these issues and others that will arise during the implementation of individual projects throughout the state.

LINKAGE WITH STORMS COMPONENTS

- Objective 1 — Project 1a: Identify issues to be addressed during each five-year implementation period and develop analysis and guidance for public input; incorporate findings and conclusions from the process into the State's storm water program.
- Objective 1 — Project 1b: Identify and solicit expertise needed to address barriers to storm water capture and use.

To optimize storm water use in local water supplies, creative solutions are needed.

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Appendices

Appendix A

SWRCB STORMS projects and corresponding CCEEB recommendations

Appendix B

Summary of report recommendations and STORMS linkage

Endnotes

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APPENDIX A

SWRCB STORMS PROJECTS AND CORRESPONDING CCEEB RECOMMENDATIONS

PROJECT NUMBER AND NAME	REC. 1	REC. 2	REC. 3	REC. 4	REC. 5	REC. 6
PHASE I PROJECTS (ACCOMPLISHED BY YEAR 4)						
1a – Promote storm water capture and use						●
1b – Identify and eliminate barriers to storm water capture and use						●
3a – Develop guidance for alternative compliance approaches for municipal storm water permit receiving water limitations	●	●				
3b – Develop watershed-based compliance and management guidelines and tools					●	
4a – Implement Senate Bill 985 - incorporate principles of storm water resources plan guidelines into storm water programs			●			
4b – Eliminate barriers to funding storm water programs and identify funding for storm water capture and use projects				●		
5a – Creat storm water program data and information "open data"		●				
6a – Establish statewide framework for urban pesticide reduction	●					
6b – Identify opportunities for source control and pollution prevention	●					
PHASE II PROJECTS (ACCOMPLISHED BY YEAR 8)						
1c – Increase storm water capture and use through regulatory approaches						●
1d – Develop and establish a monetary value of storm water			●			
2a – Encourage stakeholder collaboration to promote storm water as a resource	●					
3c – Assess Municipal storm water program monitoring and effectiveness	●	●			●	
3d – Establish statewide regulatory framework for municipal storm water programs		●				
3f – Develop guidance for implementation of post-construction requirements to improve watershed health						
4c – Identify municipal storm water permit compliance cost			●	●		
5b – Evaluate and increase storm water permit compliance		●				
5d – Align water quality statewide planning efforts with storm water program implementation - pilot project using the biological integrity plan						
6c – Evaluate and implement trash control						
PHASE III PROJECTS (ACCOMPLISHED BY YEAR 12)						
3e – Standardize minimum control measures for specific municipal program elements						
3g – Establish guidance for storm water program assest management planning and cost estimation						
4d – Identify industrial and construction storm water permit compliance cost			●			
5c – Establish sector-specific technology-based numeric effluent limitations for industrial and construction storm water permits					●	

Source: California State Water Resources Control Board, STORMS Projects webpage, http://www.swrcb.ca.gov/water_issues/programs/storm water/STORMS/strategy.shtml, accessed 12/1/17.

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APPENDIX B

SUMMARY OF REPORT RECOMMENDATIONS AND STORMS LINKAGE

RECOMMENDATION 1 - CREATIVE & FLEXIBLE SOLUTIONS

The State Water Board should prioritize clear compliance pathways that allow creative and collaborative approaches to improve water quality, recognize the gap between available resources and implementation needs, prioritize effective source control, and focus on sustainable, multi-benefit solutions to the extent possible.

Objective 3 – Project 3a: Amend the project to identify alternative compliance approaches already available and approaches to be developed during the first five-year implementation schedule.

Objective 2 – Projects 2a and Objective 3 - Project 3a: Add project to identify and facilitate development of alternative compliance approaches that can enable collaboration with the regulated community.

Objective 3 – Project 3c: Add project to develop permit language to allow compliance demonstrations for alternative and collaborative compliance approaches.

Objective 6 – Project 6b: Amend project to develop, in potential partnership with the California Stormwater Quality Association, a list of pollutants in storm water that could be addressed through true source control. Consider opportunities for enhanced collaboration with other agencies such as the Department of Pesticide Regulation, U.S. EPA, and groups such as the California Product Stewardship Council. Expand public outreach efforts to further educate the public about the sources of pollutants and the cost-effectiveness of true source control.

RECOMMENDATION 2 - OPTIMIZE USE

The State Water Board should regulate storm water as a resource, not as a waste, by establishing program guidelines, implementation tools, and flexible regulatory frameworks that focus on the goal of optimizing the use of storm water, where feasible, as a cost-effective local water supply.

Objective 3 – Project 3a: Add project to develop guidance for compliance evaluations and receiving water limitations language.

Objective 3 – Project 3c: Assess municipal storm water program monitoring and effectiveness.

Objective 3 – Project 3d: Implement project to establish a statewide regulatory framework.

Objective 5 – Project 5a: Implement project to define data needs and consider pilot or targeted data collection to inform and advance program.

RECOMMENDATION 3 - IDENTIFY FUNDING

The State Water Board should continue to provide guidance and tools for identifying and securing funding for storm water programs.

Objective 4 – Project 4b: Identify funding for storm water capture and use and expand the project description to include funding for alternative compliance mechanisms (See also Recommendation 1, Creative Solutions) and opportunities to test implementation and funding alternatives using pilot projects.

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RECOMMENDATION 4 - SOLID ECONOMICS

The State Water Board should establish guidelines for better assessing and incorporating economics into the state's storm water program. These guidelines should explicitly acknowledge and address funding and financial considerations.

Recommendation 4a: The State Water Board should consider developing consistent and reliable methods for estimating costs so that regulators, the regulated community, and the public have a clear and realistic understanding of program funding needs.

Recommendation 4b: The State Water Board should consider developing methods for storm water permittees to use to determine their financial capabilities and obligations, and to establish implementation procedures so that limited resources are focused on the most pressing concerns.

Recommendation 4c: The State Water Board should consider developing consistent methods for evaluating the cost-effectiveness and benefits of storm water capture projects.

Objective 4 – Project 4a: Amend to include development of methods for estimating financial capabilities and establishing implementation priorities.

Objective 4 – Project 4c: Amend to include a process to identify MS4 permit compliance cost estimation methods and to identify methods for evaluating the cost-effectiveness and benefits of storm water capture projects.

RECOMMENDATION 5 - SOUND SCIENCE

The State Water Board should continue to incorporate best available science and engineering practices and targeted data collection within the STORMS process to address technical issues.

Objective 1 – Projects 1b and 1c: Amend to address appropriate treatment standards based on end use and provide guidance for infiltration technologies.

Objective 3 – Projects 3a: Develop guidance specifying alternative compliance approaches for MS4 permits, including trading and offsets, variances, and compliance schedules, and evaluate the potential for statewide variances in special circumstances.

Objective 3 – Projects 3b, 3c, and 3d: Once specific scientific and technical have been identified for each five-year period, develop technical guidance clarifying how MS4 permits should be written to allow for alternative compliance mechanisms, as well as to specify changes to calculation procedures for RAAs, numeric effluent limitations, and receiving water limitations. Guidance for statewide consistency on MS4 permit requirements, implementation, monitoring, and compliance evaluations is also recommended.

RECOMMENDATION 6 - SOLICIT EXPERTISE

The State Water Board should develop a process of soliciting expert technical and legal assistance, including utility practitioners, to address barriers to storm water capture and use, and participate in the development of legislative remedies where possible.

Objective 1 – Project 1a: Identify issues to be addressed during each five-year implementation period and develop analysis and guidance for public input; incorporate findings and conclusions from the process into the state's storm water program.

Objective 1 – Project 1b: Identify and solicit expertise needed to address barriers to storm water capture and use.

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